Acta Zootaxonomica Sinica, 28 (1): 24-29 (Jan., 2003) ISSN 1000-0739
动物分类学报

DESCRIPTION OF FOUR NEW SPECIES OF HALIOTREMA JOHNSTON & TIEGS (MONOGENEA, ANCYROCEPHALIDAE)

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Abstract This paper describes the monogeneans of ornamental marine fishes from Shenzhen, Guangdong Province, China. Four new species of Haliotrema (Ancyrocephalidae) are described.

Key words Monogenea, Ancyrocephalidae, Haliotrema, new species.

Since Johnston and Tiegs (1922) erected the genus Haliotrema, over 100 species have been reported worldwide. Among them 47 species have been recorded in China, including 2 species by Yin and Sproston (1948), 20 species by Bychowsky and Nagibina (1970, 1971), 1 species by Obodnikova (1976), 2 species by Pan and Zhang (2000) and 22 species by Zhang et al. (1994, 2001). Four kinds of monogeneans were collected from ornamental marine fishes in Shenzhen City, Guangdong Province, China. These worms belong to the genus Haliotrema, but they distinctly differ from all the known species of the genus. Therefore, they are regarded as new species of Haliotrema, Ancyrocephalidae, Dactylogyridea.

The collected worms were observed alive and mounted in Berlease's fluid. The figures were drawn with the aid of drawing apparatus. All measurements were made with a micrometer and are presented in μm, as the range (minimum and maximum) followed by the mean in parentheses. The measuring methods and terminologies of Ancyrocephalids accord with A. V. Gussev (1962, 1985). All the type specimens are deposited in the Ichthyological Laboratory, Department of Biology, South China Normal University.

1 Haliotrema tachypliformis sp. nov. (Fig. 1-3)

Hosts. Lethrinus nebulosus (Forsskål), Sciaenops ocellatus (Linnaeus).

Location. Gill filaments.

Locality. Shenzhen (22°27′-22°52′N, 113°46′-114°37′E), Gangdong Province.

Date. 19 Oct. 1999.

Holotype, No. Gdsz991019-1; paratypes, No. Gdsz 991019-2-13.

Description. Medium ancyrocephalid. The worm 640-750 (698) long and 110-150 (124) wide. Two pairs of eyespots. Pharynx round, diameter 30-40 (36).

Haptor length 172-205 (191), width 95-180 (128), with 7 pairs of marginal hooklets of length 12-15 (13). Two pairs of central hamuli well developed, all basal portion with chitinous sheath and a long ligament. Ventral central hamuli broader than dorsal central hamuli, total length 105-113 (107), basal portion length 78-89 (83) with a fenestra, point portion 17-20 (19), inner root 24-32 (29) and outer root 5-7 (6). Dorsal central hamuli total length 87-98 (92), basal portion 62-78 (69), point portion 20-25 (22), inner root 22-33 (28) and outer root 12-18 (14). Ventral connective bar slightly curved and its middle portion protruding backward, length 12-15 (14) and width 57-70 (63). Dorsal connective bar length 20-23 (21), width 40-50 (42), a pair of ear-like projections in its middle portion and a tachypleus-like chitinous plate sticking out from its dorsal side.

Copulatory tube curved, total length 47-55 (51) measured along curvature, basal portion slightly enlarged, diameter 12-13, connecting to the bell-shaped disc (length 12-23, diameter 20-28). Egg has not been observed.

Description is based on 5 mounted specimens, 13 specimens have been observed.

Remarks. The new species is similar to Haliotrema lethrini (Yamaguti, 1937) Young, 1968 in the shape of the copulatory organ, but differs distinctly from the latter in the length of the copulatory

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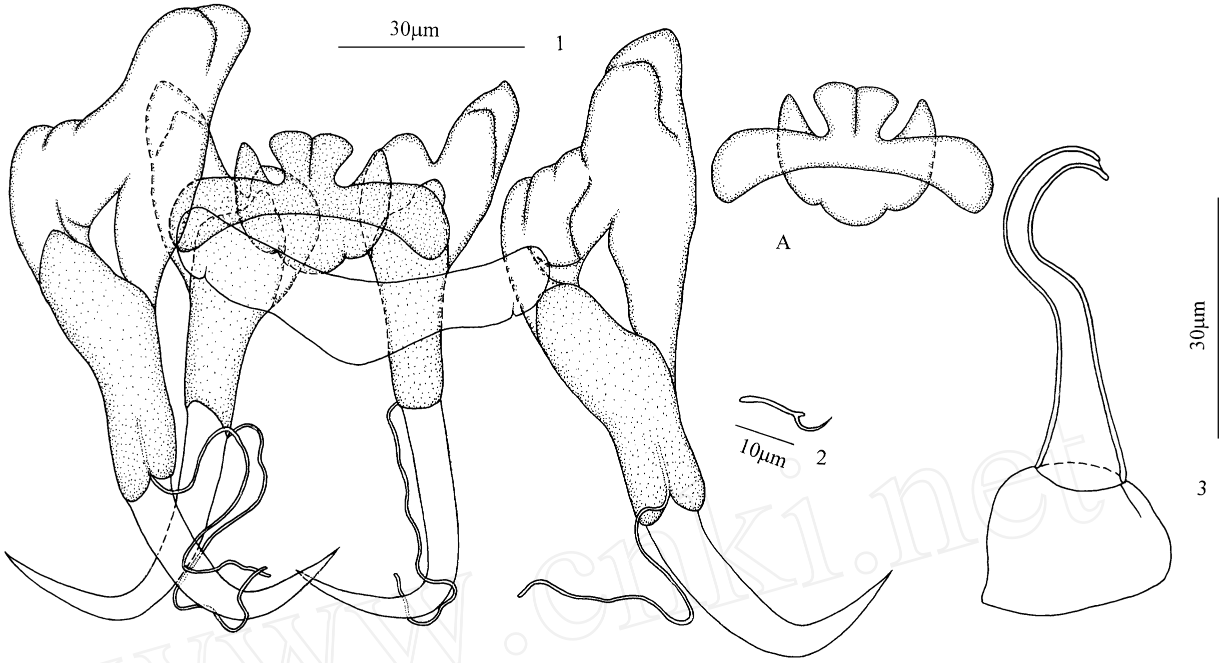
A project supported by the National Natural Sciences Foundation of China (39570089).
Received 3 Dec. 2001, accepted 20 Aug. 2002.

tube which is up to 156 long. And the new species has the following characteristics: the middle portion of the dorsal connective bar possesses a pair of ear-like projections and a tachypleus-like chitinous plate; the basal portion of central hamuli with chitinous sheath and a long ligament etc. Therefore, it differs significantly from *H. lethrini* and other known species of the genus. The species was named after the characteristic shape of the dorsal connective bar.



Figs. 1-3. *Haliotrema tachypliformis* sp. nov. 1. Central hamuli and connective bar (A. dorsal connective bar). 2. Marginal hooklet. 3. Copulatory organ.

2 *Haliotrema brachyflagellocirrus* sp. nov. (Figs. 4-6)

Hosts. *Lethrinus nebulosus* (Forskål), *Sciaenops ocellatus* (Linnaeus).

Location. Gill filaments.

Locality. Shenzhen (22°27′-22°52′N, 113°46′-114°37′E), Guangdong Province.

Date. 19 Oct. 1999.

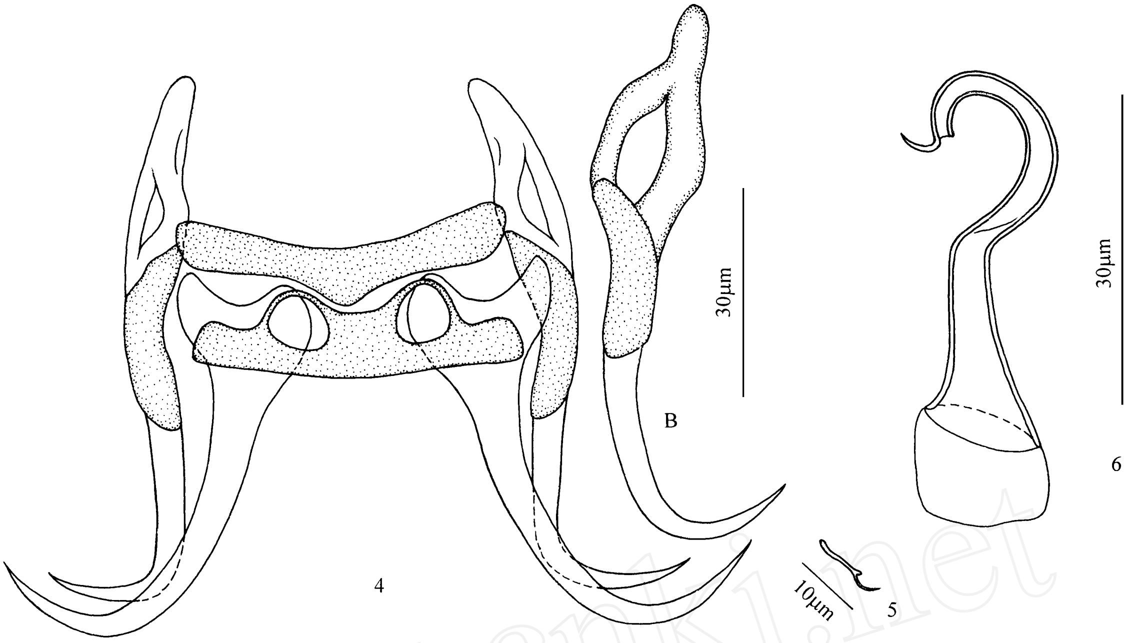
Holotype, No. Gdsz 991019-14; paratypes, No. Gdsz 991019-15-17.

Description. (based on 4 mounted specimens) Smaller ancyrocephalid, size (460-500) (485) ×(60-85) (78). Two pairs of eyespots. Pharynx round, diameter 20-35 (27).

Haptor length 137-150 (143), width 70-105 (93), with 7 pairs of marginal hooklets of length 12-14 (13). Dorsal central hamuli total length 77-80 (78), basal portion 49-51, point portion 12-15 (14), basal portion with chitinous sheath and a fenestra, its root differentiation indistinct. Ventral central hamuli total length 55-63 (57), basal portion 50-54 (52), point portion 12-15 (14), inner root 10-13 (11) and outer root 10-13 (11). Dorsal connective bar length 7-9, width 42-48 (45), its middle portion protruding backward. Ventral connective bar length 8-10, width 44-48 (46), its middle portion enlarged and possessing a pair of round holes.

Copulatory tube total length 32-40 (37), measured along curvature; its basal portion slightly enlarged, diameter 5-9 (7), connected to the short cylinder disc (length 8-13, diameter 12-15). The distal portion of copulatory tube curved into a "C" shape, its end with a short flagelliform projection (about 4.5 long). Egg has not been observed.

Remarks. The new species is similar to *Haliotrema lethrini* and *H. tachypliformis* sp. nov. in the shape of the copulatory organ, but differs from them in dimensions of the copulatory tube. The new species is very similar to *H. gracilihamus* Zhukov, 1976 in the shape of the two pairs of central hamuli, but differs from the latter in the shape and measurements of the copulatory tube which has a total length of 59-67 and the distal portion coiled back twice in a spiral. The new species is characterized by a ventral connective bar with a pair of round holes in its middle portion and a copulatory tube with a short flagelliform projection on its end, and differs distinctly in these features from H. lethrini, H. tachypliformis sp. nov., H. gracilihamus and other known species of the genus. Species was named after the characteristic structure of copulatory tube.



Figs. 4-6. Haliotrema brachyflagellocirrus sp. nov. 4. Central hamuli and connective bar (B. dorsal central hamuli). 5. Marginal hooklet. 6. Copulatory organ.

3 Haliotrema polyspirotubiferum sp. nov. (Figs. 7-9)

Hosts. Lethirnus nebulosus (Forskål).

Location. Gill filaments.

Locality. Shenzhen (22°27′-22°52′N, 113°46′-114°37′E), Guangdong Province.

Date. 19 Oct. 1999.

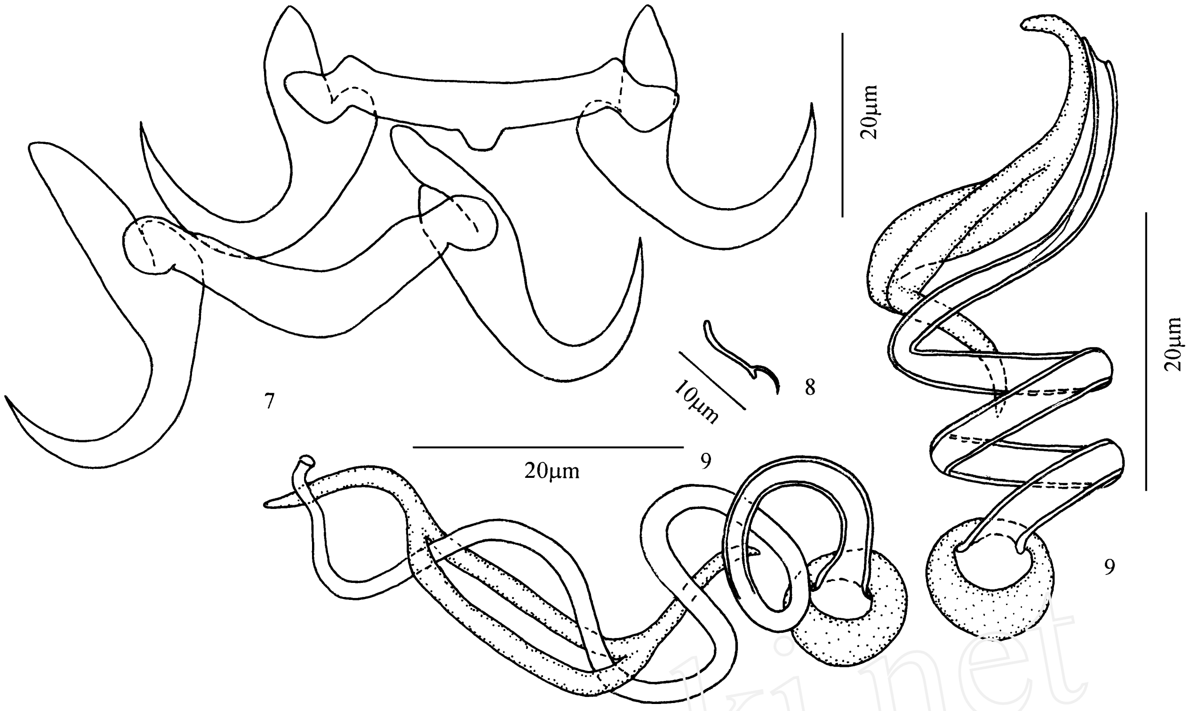
Holotype, No. Gdsz 991019-18; paratypes, No. Gdsz 991019-19-21.

Description. (Based on 4 mounted specimens) Medium ancyrocephalid, size (520-690) (630) ×(110-150) (137). Two pairs of eyespots. Pharynx approximately round, diameter 27-38 (35).

Haptor length 60-63 (62), width 82-110 (95), clearly marked off from body proper with 7 pairs of marginal hooklets of length 12-15 (14). Two pairs of well developed central hamuli, short and thick. Ventral central hamuli total length 31-34 (33), basal portion 17-23 (20), point portion 15-19 (17), inner root 11-15 (13) and outer root 3-5. Dorsal central hamuli total length 37-40 (39), basal portion 21-24 (23), point portion 12-14, inner root 15-19 (17) and outer root 5-8 (7). Ventral connective bar length 6-8, width 36-43 (38), its middle portion with a papilla-shaped backward projection and both ends curved backward. Dorsal connective bar slightly curved into a "V" shape, length 5-8 (7), width 27-44 (35).

Copulatory tube spiraled back on itself proximally two and a half times, total length 85-95 (91) measured along its curvature, basal portion diameter 2-4, connecting to basal ring (size 10 ×11); the distal portion supported by a supporting apparatus with a split in the middle portion and both curved ends. The supporting apparatus has a total length of 27-35 (31), measured along curvature, total width of split middle portion 6-8. Egg has not been observed.

Remarks. The new species is similar to Haliotrema annulocirrus Yamaguti, 1968 and H. chrysotaeniae Young, 1968 in the shape of copulatory organ, all have a spiral tube, but differs from them in its measurements and construction. The copulatory tubes of the two known species are spiral spines, length 56 and 69 respectively, while that of the new species is a spiral tubule (basal diameter 2-4, length 85-95). Besides, the middle portion of the supporting apparatus has a split and both ends are curved in the new species. Thus, it differs from these similar species and all other known species of the genus.



Figs. 7-9. Haliotrema polyspirotubiferum sp. nov. 7. Central hamuli and connective bar. 8. Marginal hooklet. 9. Copulatory organ.

4 Haliotrema shenzhenensis sp. nov. (Figs. 10-12)

Hosts. Sciaenops ocellatus (Linnaeus).

Location. Gill filaments.

Locality. Shenzhen (22°27′-22°52′N, 113°46′-114°37′E), Guangdong Province.

Date. 19 Oct. 1999.

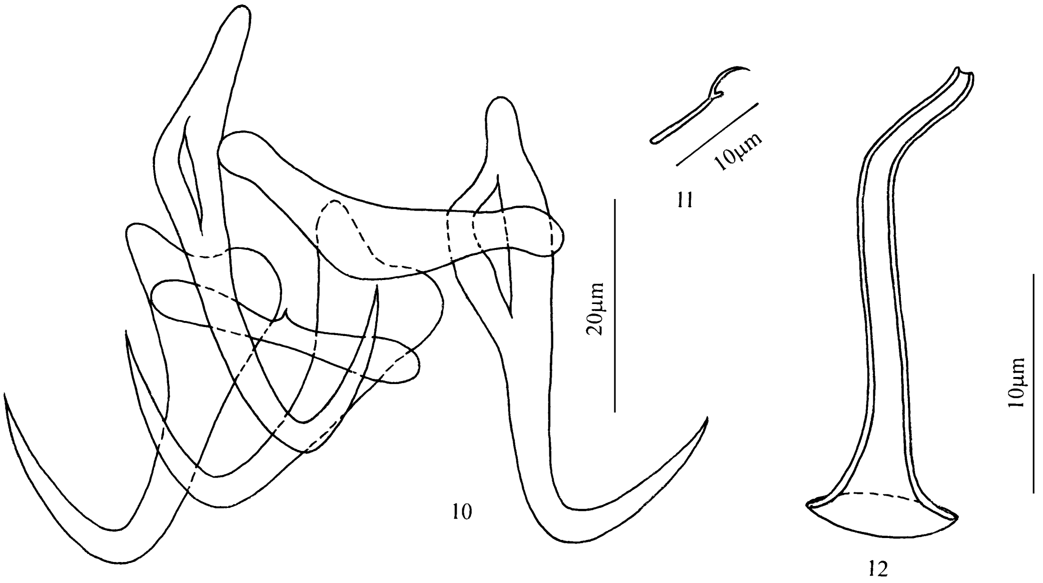
Holotype, No. Gdsz 991019-22; paratypes, No. Gdsz 991019-23-25.

Description. (based on 4 mounted specimens) Smaller ancyrocephalid, size 370-450 (415) × 70-110 (86). Two pairs of eyespots. Pharynx round, diameter 18-23 (20).

Haptor length 60-75 (68), width 57-65 (60), clearly marked off from body proper and with 7 pairs of marginal hooklets of length 11-13. Two pairs of central hamuli slender. Dorsal central hamuli total length 40-45 (43), basal portion 25-28 (27), point portion 15-17, its basal portion with a fenestra, its root differentiation indistinct. Ventral central hamuli total length 27-33 (31), basal portion 27-30 (29), point portion 16-19 (18), inner root 5-9 (6) and outer root 2-5 (4). Dorsal connective bar slightly curved, length 6-9 (8), width 26-33 (29). Ventral connective bar straight, with a short spine on the outside of the middle portion, length 5-6, width 20-31 (26).

Copulatory tube a little slender, proximal portion straight and enlarged at the end, distal portion slightly curved, total length 21-24 (22) measured along curvature, diameter 2.5-3.0. Supporting apparatus absent. Egg has not been observed.

Remarks. The new species is similar to Haliotrema flexicirrus Yamaguti, 1968 in that the copulatory organs of both species have a slender copulatory tube and lack supporting apparatus, but differs from the latter in the shape and measurements of the copulatory tube. The copulatory tube of the latter is curved into a "C" shape, total length 45-65; but distal portion of the copulatory tube of the new species is only slightly curved and the proximal portion is straight. Besides, the ventral connective bar of the new species is straight, with a short spine on the outside of the middle portion. Thus it differs from H. flexicirrus and all other known species of the genus.



Figs. 10-12. *Haliotrema shenzhenensis* sp. nov. 10. Central hamuli and connective bar. 11. Marginal hooklet. 12. Copulatory organ.

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海盘虫属四新种记述（单殖亚纲，锚首虫科）

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摘　要　记述了广东深圳市两种海洋观赏鱼（采自海洋馆，引种于本地养殖网箱）鳃上寄生单殖吸虫锚首虫科 Ancyrocephalidae Bychowsky and Nagibina，1978、海盘虫属 *Haliotrema* Johnston and Tiegs，1922 中的 4 新种。文中量度 μm，模式标本保存于华南师范大学生物系。

1　鲎形海盘虫，新种 *H. tachypliformis* sp. nov.

宿主：星斑裸颊鲷 *Lethrinus nebulosus*（Forskål）和眼斑拟石首鱼 *Sciaenops ocellatus*（Linnaeus）。

寄生部位：鳃。广东深圳，1999-10-19。

虫体大小（640～750）（698）×（110～150）（124）。腹中央大钩全长 105～113（107），背中央大钩全长 87～98（92）。腹联结片长 12～15（14），宽 57～70（63）；背联结片长 20～23（21），宽 40～50（42），中部有一对朝前的耳突，背面贴附一鲎形几丁质的盾片。交接管据弯度全长 47～55（51），基径 12～13，连于钟形基座上，基座大小（20～28）（24）×（12～23）（18）。

新种与近似种 *H. lethrini*（Yamaguti，1937）Young，1968 在交接器形态上很相似，但量度上明显不同（近似种交接器长 156，新种为 55）。且新种 2 对中央大钩基部均外包几丁质鞘并各附一较长韧带，背联结片中部有一对朝前的耳突，背面贴附一鲎形的几丁质盾片较特殊，区别于 *H. lethrini* 和本属中其它已知种类。

2　短鞭茎海盘虫，新种 *H. brachyflagellocirrus* sp. nov.

宿主：星斑裸颊鲷 *Lethrinus nebulosus*（Forskål）和眼斑拟石首鱼 *Sciaenops ocellatus*（Linnaeus）。

寄生部位：鳃。广东深圳，1999-10-19。

虫体大小（460～500）（485）×（60～85）（78）。背中央大钩全长 77～80（78），腹中央大钩全长 55～63（57）。背联结片长 7～9，宽 42～48（45）；腹联结片长 8～10（9），宽 44～48（46），近中部一侧扩大，并有一对圆孔。交接管据弯度长 32～40（37），基径 5～9（7），连于短圆筒形的基座上，基座大小（8～13）×（12～15）。交接管远端弯成“C”字形，其末端附有一短鞭突（长约 4.5）。

新种与 *H. lethrini* 和 *H. tachypliformis* sp. nov. 在交接器外形上相似，但在交接器量度上明显不同（近似种的交接管长分别为 156 和 47～55）。它与 *H. gracilihamus* Zhukov，1976 在两对中央大钩的外形上非常相似，但在交接管的形状和量度上不同，后者的交接管远端弯成 2 个螺旋，长度为 59～67；且它们的腹联结片也不同。而且新种具有腹联结片近中部有一对圆孔和交接管末端附有 1 短鞭突等重要特征，区别于 *H. lethrini*、*H. tachypliformis* sp. nov.、*H. gracilihamus* 和本属中其它已知种类。

3　多旋管海盘虫，新种 *H. polyspirotubiferum* sp. nov.

宿主：星斑裸颊鲷 *Lethrinus nebulosus*（Forskal）。

寄生部位：鳃。广东深圳，1999-10-19。

虫体大小（520～690）（630）×（110～150）（137）。腹中央大钩全长 31～34（33）。背中央大钩全长 37～40（39）。腹联结片长 6～8，宽 36～43（38），中部后侧有一乳突，两端向后弯折。背联结片弯曲略呈“V”字型，其长 5～8（7），宽 27～44（35）。交接管卷曲成两个半螺旋，据弯度长 85～95（91）。基径 2～4，连于基环（大小 10×11）上；远端伸展，附于一中部裂开的两端弯曲的条状支持器上，支持器据弯度长 27～35（31），中部宽 6～8。

新种与 *H. annulocirrus* Yamaguti，1968、*H. chrysotaeniae* Young，1968 在交接器形态上相似，均具有螺旋状的交接管。但在量度上不同，两个已知种的交接管（长度分别 56 和 68.76）为针刺管状，新种的交接管（长 85～95）为较粗的螺管（基径为 2～4），且弯曲的条状支持器中部裂开，而不同于两个近似种和本属中其它已知种类。

4　深圳海盘虫，新种 *H. shenzhenensis* sp. nov.

宿主：眼斑拟石首鱼 *Sciaenops ocellatus*（Linnaeus）。

寄生部位：鳃。广东深圳，1999-10-19。

虫体大小（370～450）（415）×（70～110）（86）。背中央大钩全长 40～45（43）。腹中央大钩全长 27～33（31）。背联结片微弯，中部较肥大，其长 6～9（8），宽 26～33（29）。腹联结片长 5～6，宽 20～31（26）平直，中部一侧具一棘突。交接管为一细小管，近端笔直而基部扩大，远端微弯，据弯度全长 21～24（22），基径 2.5～3.0，无支持器。

新种在交接器上与 *H. flexicirrus* Yamaguti，1968 相似，均为细小管和无支持器。但在交接管的形状和量度上不同，后者的交接管（长 45～65）弯成“C”字形，而新种的交接管（长 21～24）仅远端微弯，近端笔直。且腹联结片平直，其中部一侧具一棘突等特征而区别于 *H. flexicirrus* 和本属中其它已知种类。

关键词　单殖亚纲，锚首虫科，海盘虫属，新种.

中图分类号　Q959.153

国家自然科学基金资助项目（39570089）.